

FOK, V.A.

Notes on Albert Einstein's autobiography. Usp.fiz.nauk. 59 no.1:
107-118 My '56. (MLRA 9:12)
(Einstein, Albert, 1879-1955)

613.503
.86

Raboty Po Kvantovoy Yeorii Polya (Work in the Quantum Field Theory) Leningrad,
Izd-Vo Leningradskogo Universiteta, 1957.

157, (1) P.

At Head of Title: Leningrad, Universitet.

"Literatura": P. (158)

613.503 N/5

MEA

Fock, V. A.

CZECHOSLOVAKIA/Theoretical Physics - Theory of Relativity. Unified B-2
Field Theory.

Abs Jour : Ref Zhur - Fizika, No 2, 1958, No 2645

Author : Fock. V.A.

Inst : Not Given

Title : Homogeneity, Covariance, and Relativity

Orig Pub : Chekhosl. fiz. zh., 1957, 7, No 3, 255-261

Abstract : No abstract

Card : 1/1

Fock V.A.
CZECHOSLOVAKIA/Theoretical Physics - Quantum Mechanics

B-4

Abs Jour : Ref Zhur - Fizika, No 9, 1958, No 19637

Author : Fock V.A.

Inst : Not Given

Title : On the Interpretation of Quantum Mechanics.

Orig Pub : Chokhosl. fiz. zh., 1957, 7, No 6, 643-656

Abstract : See Abstract 19636

Card : 1/1

usage on his paper (published in 1958), the theory of the atom.
Of greatest interest for the author, were, however, the 6 or 7 talks
with Nils Bor (Niels Bohr).

Not given

ASSOCIATION
PRESENTED BY

SUBMITTED
AVAILABLE

Card 1/1

APPROVED FOR RELEASE: 08/23/2000

Library of Congress

CIA-RDP86-00513R000413410013-4"

FOK, V. [A.]

"Three Lectures on Relativity Theory," Reviews of Modern Physics,
29, 325, 1957.

Summarizes three lectures which Fok gave in Copenhagen.

Evaluation - A-3,106,478, 9 June 1958.

and A-3, 104, 807, 19 May 1958

AUTHOR:

Fok, V. A.

53-4-6/10

TITLE:

On the Interpretation of Quantum Mechanics (Ob interpretatsii kvantovoy mekhaniki)*

PERIODICAL:

Uspekhi Fiz.Nauk, 1957, Vol. 62, Nr 4, pp. 461-474 (USSR)

ABSTRACT:

The present paper is arranged as follows: 1: The experiments of interpreting the wave functions classically and the causes of their failure. 2: The idea by Niels Bohr and his terminology: According to the author's opinion, Niels Bohr stresses the part played by the apparatus too much and underestimates the necessity of abstraction. Niels Bohr, in a manner of speaking, forgets that the properties of the micro object and not the properties of the apparatus have to be investigated. Next, the author deals with the supposed deficiencies of Bohr's terminology. According to the statements made by the author, Bohr does not support the positivistic point of view and wants to neglect the term "uncontrollable interaction". Furthermore, according to Bohr, the general causality principle has to be distinguished from the determinism of the Laplace type, because only Laplace's determinism contradicts the law of atomic physics. 3: The rejection of new ideas as a reaction to their positivistic interpretation. The most extreme positivistic point of view is held by P. Jordan, serious physicians, according to the opinion of the author,

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On the Interpretation of Quantum Mechanics.

53-4-6/10

like M.Born, W.Heisenberg, disregard this point of view more and more. The author then deals with the too narrow deterministic point of view of the deterministical point of view. 4: Relativity with respect to means of observation: Such a relativity, according to the opinion of the author, by no means destroys objectivity. The objects of the micro world are just as real and their properties just as objective as those studied by classical physics. 5: The conception of the apparatus. 6: The nature of the dualism wave-particle. According to the opinion of the author an atomic object has the same potential possibilities to occur, according to exterior conditions, either as a wave or as a particle or also as an intermediate form. 7: The probability description of the interaction between object and device. 8: The probability characteristic of the state of an object. 9: The conceptions of the potential possibilities and those realizable in classical physics. 10: The probability and the statistics in quantum mechanics. 11: The forms of the expression for the causality principle in quantum mechanics. 12.The philosophical problems raised by quantum mechanics. There is 1 figure.

AVAILABLE:

Library of Congress

*This article is being published in English in the Czsl. Journal of Physics (Ceskoslovensky Casopis Pro Fysiku) [issue not given]

Card 2/2

F. O. K. - U. A.

25(9)

ATTENTION:

TEXT:

PHONOGRAPHIC

ABSTRACT:

Chernov, Ye. N., Candidate of Philosophical Sciences

Problems Concerning Philosophy of Modern Natural Science (Filosofskie
voprosy sovremennoy yestestvoznaniya).

Vestnik Akademi nauk SSSR, 1952, Nr 1, pp 132-136 (USSR)

At the end of October, 1951 year an all-Union conference took
place which dealt with these problems. The conference had been
convened by the Akademiya nauk (Academy of Sciences) and the
Ministerstvo vysshago obrasovaniya SSSR (Ministry of Higher
Education of the USSR). More than 600 well-known experts in
the sphere of sciences and philosophy took part, among them
Academicians and Corresponding Members, Academy of Sciences,
USSR, representatives of the Academies of the Union Republics
and Branch Academies as well as scientists from scientific
research institutes and universities. Scientific representa-
tives from Bulgaria, Poland, Germany, Hungary and Czechos-
lovakia were guests. It was the first time the conference to
unite the creative powers of Soviet philosophical scientists
for the purpose of a dialectic-materialistic generalization
of the achievements of modern science and for raising its level
which is intended to contribute towards a solution of the most

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important scientific problems in an short a period as possible.
Such were the ideas expressed by Academician A. N. Kosyginov,
President of the AS USSR and E. V. Ostrevitskyanov, Chairman
of the Committee for the Organization of the Conference on the
occasion of their opening speeches.

Next, the following reports were heard and discussed:
M. N. Mikheyev, Academician, spoke about Lenin's "materialism and
empiricism" and the transformation of the scientific method of
perception and transformation of the world.
M. E. Osel'syanovskiy, Academician of the AS USSR dealt in
his report with V. I. Lenin and the philosophical problems of
modern physics.

S. M. Kefauz, Doctor of Philosophical Sciences, Corresponding
Member, Academy of Pedagogical Sciences USSR, reported on the
interrelation in nature of the forms of movement of matter.
V. A. Puk spoke about the interpretation of quantum mechanics.
A. B. Altkhazirov, Corresponding Member, Academy of Sciences,
USSR, spoke about the philosophical meaning and the importance
of the theory of relativity.

S. L. Sobolev, Academician, and A. A. Lavrukhov, Professor,

dealt with cybernetics and natural sciences.
M. A. Anisimov, Academician, spoke about some methodical
problems of chemistry.
B. A. Belykh, Academician, and G. M. Zhab, Corresponding
Member, AS USSR, reported on the role of physics and chemistry
in investigating biological problems.

A. I. Oparin, Academician spoke about the formation of life
in the light of the achievements of modern natural science.
M. A. Gribshchikov's report dealt with the Lenin's "dialect theory
and modern physiology of the sensual organs."
A. E. Zhuravskiy opposed the opinion expressed by M. E. Osel'-
yanovskiy who said that in the capitalist countries a crisis
in physics is approaching.

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Fok, V. A.

30753-66-4-6/12
None Given
All-Union Conference on Philosophical Problems of Modern Natural Science (Vsesoyuznoye sveshchaniye po filosofskim voprosam sovremennoye yestestvoznaniya) By the Editor (ot redaktsii) Uspelki fizicheskikh nauk, 1959, Vol. 68, Nr. 4, pp 717-727 (US23)
The above conference took place at Moscow in October 1958; it was attended by more than 600 scientists, among them 20 Academicians and 50 Corresponding Members, AS USSR, as well as by delegates from Bulgaria, Hungary, East Germany, and Czechoslovakia. The following lectures delivered at the conference are listed: Academician M. E. Mikhailov (on Lenin's book: "Materialism and Empirio-criticism"), Academician AS USSR E. N. Oshchepkovskiy ("V. I. Lenin and the Philosophical Problems of Modern Critique"), Doctor of Philosophical Sciences B. M. Fedorov ("On the Relationship of the Theory of Relativity to Matter in Nature"), Academician V. A. Fok (on the question of Quantum Mechanics - already published in Uspelki fizicheskikh nauk, 1957, Vol. 62, Nr. 4), Corresponding Member AS USSR A. D. Litvinov ("The Philosophical Content of and the

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Significance of the Theory of Relativity"), Academician V. A. Shcherbakov (on the Philosophical Problems of Cosmogony"), Academician E. N. Oshchepkovskiy (on the Philosophical Problems of the Theory of Relativity and Academician V. A. Engel'gardt ("On the Part Played by Physics and Chemistry in the Investigation of Biological Problems"), Academician A. I. Oparin ("The Problem of the Origin of Life in the Light of the Progress Made by Modern Natural Science"), and, finally, Corresponding Member AS USSR E. N. Grashenkov ("Lenin's Theory of Reflection and the Modern Physiology of the Sensory Organs"). About 50 delegates took part in the discussion of these lectures. Next, the introductory speech delivered by the President of the AS USSR, Academician L. M. Brezhnev, is reproduced, and so is the closing speech delivered by the President of the V. I. Lenin Institute, Academician V. A. Engel'gardt. The following is given as an example of the philosophical problems of modern natural science is given under the title "On the Tasks of dealing with Philosophical Problems of Natural Science". The resolution essentially contains an appeal for the

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investigation of all new scientific facts in the sense of the theory of Marx and Lenin and of dialectic materialism for adaptation of ideas to the resolution of the 20th Party Congress, cooperation of institutes, departments of research work, as well as some practical organization. In conclusion, a list of printed works is given, in which the lectures delivered during the conference were published. There are 8 Soviet references.

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SOV/109-3-12-1/13

AUTHORS: Fok, V.A., Vaynshteyn, L.A. and Belkina, M.G.

TITLE: Duet Propagation of Radio Waves in the Lowest Layer of Troposphere (Rasprostraneniye radiovoln po prizemnomu troposfernomu volnovodu)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol 3, Nr 12, pp 1411 - 1429 (USSR)

ABSTRACT: The work is devoted to the theory of propagation of radio waves in the tropospheric waveguide (inversion layer), which is elaborated on the assumption that the points of transmission and reception are both inside the waveguide. This type of propagation can be referred to as the inside-layer propagation. The basic formulae of the work are taken from a number of the authors' previous works (Refs 1-3). It is assumed that the attenuation coefficient for the case when the refraction index of the atmosphere is an arbitrary function of height can be expressed by:

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SOV/109-3-12-1/13

Duct Propagation of Radio Waves in the Lowest Layer of
Troposphere

$$V(x, y, y', q) = \sqrt{\frac{x}{\pi}} e^{-i\frac{\pi}{4}} \int_C e^{ixt} F(t, y, y', q) dt \quad (1)$$

where the contour C extends over all the poles of the integrated function in the positive direction. If the parameter $q = \infty$, which corresponds to an arbitrary polarisation at cm and short waves and to horizontal polarisation at longer waves, the integrated function F can be written as shown in Eq (2), where y and y' are normalised heights of the point of transmission and the point of reception, as defined by Eqs (3). The parameter x is the normalised distance between the two points, as expressed by Eq (4), where the parameter m is given by Eq (5) in which a is the radius of the Earth. The functions f_1 and f_2 are the independent solutions of the differential equation which is expressed by Formula (6). The function $p(y)$ in Formula (6) depends on the refractive index $M(h)$ in the manner shown in Eq (7),

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Duct Propagation of Radio Waves in the Lowest Layer of Troposphere

where n is the refractive index for the air. The sub-integral function F , for the case of the inside-waveguide propagation, can be expressed by Eq (20), where Λ is defined by Eq (21). Various auxiliary functions in Eqs (20) and (21) are defined by Eqs (12) - (19). The attenuation coefficient V can be represented as a series:

$$V(x, y, y') = 2 \sqrt{\pi x} \cdot \sum_{m=1}^{\infty} R_m e^{ixt_m} \quad (22),$$

where R_m is the residue of the function F at the m -th pole t_m . The expression for R_m is therefore in the form of Eq (24). Most of the numerical results presented in this work are based on the use of Eqs (22), (23) and (24). The accuracy of these equations is borne out by the fact that the attenuation coefficient evaluated by using them is only slightly different from that determined by using accurate formulae; the results are indicated in Figures 1. The heavy curves of Figures 1 were found from the accurate

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SOV/109-3-12-1/13

Duct Propagation of Radio Waves in the Lowest Layer of the Troposphere

formulae (Eqs (25) and (26)) while the fine curves correspond to the results obtained from Eqs (23) and (24). The functions f_1 and f_2 of Eq (2), which are referred to as the height factors, can be evaluated by using the Airy functions. Thus, it is shown that f_1 and f_2 are in the form of Eqs (31), where ψ_1 and ψ_2 are given by Eqs (32); ξ_1 is found from Eqs (33), for which y_1 is the smaller root of Eq (34); v and u in Eqs (32) are the Airy functions. From Eqs (31), it follows that R_1 can be expressed by Eq (36). If R_1 is evaluated approximately by employing Eq (24) and more accurately by employing Eq (36), it is found that Eq (24) gives erroneous results. This is shown in Table 2, where R_1 is evaluated for two values of Y and two values of y_1 . In this case, it is therefore necessary to employ Eqs (31), (32) and (33). The attenuation coefficient V is dependent on x , y and y and on the function $p(y)$ which is dependent on the

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SOV/109-3-12-1/13

Duct Propagation of Radio Waves in the Lowest Layer of Troposphere

parameters y_1 and y_2 . The function $p(y)$ is characterised by three parameters which are expressed by Eqs (38), (39) and (40). These parameters are shown in Tables 3a and 3b for two groups of propagation conditions (see p 1418). The curves of $p(y) - p(y_1)$ for all the cases of Tables 3 are shown in Figures 2. The attenuation functions for these cases are shown in Figures 3 and 4. The curves of Figures 2, 3 and 4 can be used to investigate the conditions of actual propagation routes. The conditions represented by the first row of Table 3a and the first row of Table 3b were chosen for special investigation. The results are shown in Figures 10, 11 and 12; Curves 1 in these figures correspond to the wavelength of 3.33 cm, Curves 2 are for the wavelength of 10 cm, Curves 3 are for 30 cm, Curves 4 of Figure 10 are for the 90 cm wavelength. In an earlier work (Ref 3), it was shown that Eq (23) can be written as Eq (45), where m is the number of a given root and S_1 is in the form of the integral given by Eq (46). Eq (45) can also be written in the form of Eq (52) where G is expressed by Eq (53) and z_1 is the root of

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SOV/109-3-12-1/13

Duct Propagation of Radio Waves in the Lowest Layer of
Troposphere

Eq (54). From Eq (52) and Eq (55), it follows that the critical wavelength for the tropospheric waveguide is in the form of Eq (58). The term "critical wavelength" does not imply a discontinuity in the attenuation coefficient of the system; it is therefore a purely arbitrary term. It is of interest to find what factors, apart from $M(0)$ and $M(h_1)$, determine the magnitude of the critical wavelength. It is found that $M''(h_1)$ is also one of the principal parameters which determines the value of the attenuation coefficient. This is borne out by the fact that the factor χ_m , which is defined by Eq (67), can be expressed in the form of Eq (70). By employing parameters h , $M(0)-M(h_1)$ and $M''(h_1)$, it is found that the attenuation coefficients for simple waves are approximately equal for widely differing types of propagating conditions, i.e. M-profiles. This means that it is necessary to take into account also some additional parameters but this problem has not yet been solved. One of the most important results of

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Duct Propagation of Radio Waves in the Lowest Layer of Troposphere

the analysis is the fact that long-distance tropospheric propagation of the waveguide type is only slightly dependent on the wavelength. Thus, even if the propagated wavelength is longer by an order than the critical wave,

a long-distance propagation is still possible. The calculations for this work were carried out by the mathematical group, consisting of O.A. Merkulova, V.M. Khapayeva, A.M. Soboleva, L.Ye. Molodtsova, Z.G. Repina and A.G. Mayorova. There are 17 figures, 4 tables and 7 references, 3 of which are English and 4 Soviet.

SUBMITTED: June 1, 1957

Card 7/7

Fock V.A.

CZECHOSLOVAKIA/Theoretical Physics - Quantum Mechanics

B-4

Abs Jour : Ref Zhur - Fizika, No 9, 1958, No 19636

Author : Fock, V.A.

Inst : ~~Not Given~~

Title : On the Interpretation of Quantum Mechanics

Orig Pub : Goskosl. casop. fys., 1958, 8, No 1, 3-14; Sm. RZhFiz, 1958
No 5, 9911

Abstract : See Referat Zhur Fizika, 1958, No 5, 9911.

Card : 1/1

FOK, V.A.; FEDOROV, A.A.

 Diffraction of a plane electromagnetic wave on an ideally conducting paraboloid of revolution. Zhur. tekhn. fiz. 28 no.11: 2548-2566 N '58. (MIRA 12:1)
(Electric waves)

KURCHATOV, I.V., akademik; SEMENOV, N.N., akademik; TOPCHIEV, A.V.,
akademik; ALEKSANDROV, A.P., akademik; IOFFE, A.F., akademik;
FOK, V.A. akademik; VUL, B.M.

Outstanding scientific discovery; on the awarding of the
Nobel prize in physics to the Soviet scientists P.A. Cherenkov,
I.E. Tamm, I. M. Frank. Vest.AN SSSR 28 no.12:7-9 D '58.

1. Chlen-korrespondent AN SSSR (for Vul).
(Cherenkov radiation)

24(5) PHASE I BOOK EXPLOITATION 50V/3313

Akademika Nauk SSSR, Institut Filosofii

Filozofskiy voprosy sovremennoy fiziki (Philosophical Problems of Modern Physics. Collection) Moscow, Izd-vo AN SSSR, 1959. 426 p. Arrats slip inserted. 7,000 copies printed.

Ed.: I. V. Kurnakov and M. E. Osel'yanovskiy; Ed. of Publishing House: V. E. Kurov; Tech. Ed.: S. G. Martovitch.

PURPOSE: This book is intended for physicists but may be read gainfully by other scientists and the educated layman interested in the philosophical questions of advanced physics.

COVERAGE: This book contains 12 articles on philosophical problems in physics. Problems are divided into three subject divisions: 1) general problems of quantum theory; 2) problems in the theory of relativity; 3) problems in the theory of atomic physics. The views of Einstein, Bohr, Born, Planck, Pauli, Schrodinger, Heisenberg, Janossy, et al. are presented and subjected to criticism from the Soviet side by Osel'yanovskiy, Polikarov, Pok, et al. Questions dealing with idealism, agnosticism, and dialectical materialism in the philosophy of physics are discussed. This collection of articles is the third in a series under the same title. Earlier volumes were published in 1952 and 1958. References accompany each article.

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PHASE I BOOK EXPLOITATION NOV/3493

Vsesoyuznoye soveshchaniye po filosofskim voprosam yestestvoznaniya
Filosofskie problemy sovremennoye yestestvoznaniya: trudy sovesh-
chaniya... (Philosophical problems of modern Natural Science: the
Transactions of the All-Union Conference on Philosophical Problems
of Natural Science) Moscow Izd-vo AN SSSR, 1959. 663 p.
Errata slip inserted. 6,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR.

Ed. of Publishing House: A.I. Kompaneyets; Tech. Ed.: I.M. Dorokhin;
Editorial Committee: P.M. Fedoseyev, Corresponding Member, A-Jay
of Sciences USSR (Chairman), B.W. Val, Corresponding Member, A-Jay
of Sciences USSR, M.E. Osel'yanovskiy, Academician, Academy
of Sciences USSR, M.M. Stizyan, Corresponding Member, Academy
of Sciences USSR, V.M. Solov'ev, Professor, and V.K. Chikanov,
Candidate of Philosophical Sciences (Scientific Secretary)

PURPOSE: This book is intended for natural scientists and philosophers
who are interested in coordinating Communist philosophy with science.
COVERAGE: This is a publication of the transactions of the All-Union
Conference on Philosophical Problems of Natural Science which took
place in Moscow, October 21-25, 1958. The Conference was
attended by 20 academicians and 30 corresponding members of the
Academy of Sciences USSR, 15 academicians and 34 members of re-
public and special academies, 186 university and college teachers,
240 workers of scientific research institutions, 57 factory workers,
officials. The purpose of the Conference, as expressed by the
Chairman of the Editorial Committee K.V. Ostrovitskiy, was
to unite the efforts of Soviet philosophers and scientists in
the dialectical-materialistic interpretation of the achievements
of modern science, and to provide the philosophical background
required for the study of modern scientific problems.

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SOV/54-59-3-12/21

AUTHOR: Fok, V. A.

TITLE: On the Canonical Transformation in Classical and Quantum Mechanics

PERIODICAL: Vestnik Leningradskogo universiteta. Seriya fiziki i khimii, 1959, Nr 3, pp 67 - 70 (USSR)

ABSTRACT: The present paper investigates more closely the similarity of the unitary operational transformation to the tangential transformation of classical mechanics. The transformation functions for both cases have the following form:
 $S = S(q_1, \dots, q_n; Q_1, \dots, Q_n)$ and their tangential function is determined by the differentials:

$$\sum_{r=1}^n p_r dq_r - \sum_{r=1}^n P_r dQ_r = dS; \quad p_r = \frac{\partial S}{\partial q_r} \quad \text{and} \quad P_r = \frac{\partial S}{\partial Q_r} \quad (3) \text{ follows}$$

herefrom. This solution is possible in all cases as its determinant is unequal to 0. In quantum mechanics a tangential transformation means a unitary transformation of the representation, where q denote the diagonal to the representations in which Q are the diagonals. The matrix of the transformation operator

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On the Canonical Transformation in Classical and
Quantum Mechanics

SOV/54-59-3-12/21

has the following form:

$\langle Q' | F^* | Q \rangle = \int \bar{\Psi}_{Q'}(q) F \Psi_Q(q) dq$. The eigenfunction $\Psi_Q(q)$ may be expressed by a special unitary operator so that $F^* = U F U^{-1}$. For the orthogonal transformation and in semiclassical approximation and the relationship

$$S - S' = \sum_{r=1}^n (Q'_r - Q_r) \frac{\partial S}{\partial Q_r} = S - S' = (Q - Q') P \quad \text{the following is obtained}$$

with

$\int \bar{\Psi}_{Q'}(q) \Psi_Q(q) dq = c^2 \int e^{\frac{i}{\hbar} (Q - Q') P} \left| \frac{\partial S^2}{\partial Q \partial q} \right| dq$. The Jakobi-transformation is obtained with P_r according to (3), and by the introduction of the δ -function the following simplified form:

$$\int \bar{\Psi}_{Q'}(q) \Psi(q) dq = \delta_0(Q - Q'). \quad \text{The operator } F \text{ expressed in } q_r \text{ and } p_r$$

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On the Canonical Transformation in Classical and
Quantum Mechanics

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$p_r = -i\hbar \frac{\partial}{\partial q_n}$. By the effect of the operator upon the function $\exp(\frac{i}{\hbar}S)$ an approximation of this function is attained and consequently the expression $F(q,p) = F(q(Q,P), p(Q,P)) = F^*(Q,P)$ is obtained, and thus, for $(Q'|F^*|Q) = c^2 \int F^*(Q,P) e^{i/\hbar(Q'-Q)P} dP$. The operator $-i\hbar \frac{\partial}{\partial Q'}$ applicable to P is reintroduced for the computation of the integral, and the operator F^* is set up from the integral, and for the rest δ -function is re-introduced; thus, the following simplified expression is obtained:

$(Q'|F^*|Q) = F^*(Q, -i\hbar \frac{\partial}{\partial Q'}) \delta_0(Q-Q')$. Therefore, it is possible that $F(q,p) = F^*(Q,P)$ which contains the S -function in the expressions

$$p = \frac{\partial S}{\partial q} \quad \text{and} \quad P = -\frac{\partial S}{\partial Q}.$$

SUBMITTED: April 15, 1959
Card 3/3

AUTHOR: Fok, V.A.

SOV/109-4-4-23/24

TITLE: Concerning the Letter to the Editor by R.G. Mirimanov
(Po povodu pis'ma v redaktsiyu R.G. Mirimanova)
(Letter to the Editor)

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 4,
p 730 (USSR)

ABSTRACT: A letter by R.G. Mirimanov appeared in this journal in 1958 (Nr 7, p 971). In connection with the letter, the author finds it necessary to communicate the following. Some time ago, he received a letter from Professor J.B. Keller, New York University, Institute of Mathematical Sciences, in which it was pointed out that R.G. Mirimanov committed a plagiarism with respect to a number of the works of Keller and his associates (Ref 3). The author investigated the complaint and found that, in fact, the formulae from the Mirimanov paper (Ref 2) coincide almost exactly with those of Keller and his associates, except that the unknown function is denoted with a symbol φ instead of p . As regards the other works of R.G. Mirimanov Card1/2 (which he mentioned in his letter to the editor) these are

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Concerning the Letter to the Editor by R.G. Mirimanov (Letter to the Editor)

regarded as a collection of formulae, the major portion of which are copied from Keller and his co-authors without understanding their meaning. The letter from Professor Keller was sent to the author (and not to Mirimanov) in view of the fact that the author sponsored the first paper by Mirimanov (Ref 1). There are 3 references, 2 of which are Soviet and 1 English.

SUBMITTED: October 3, 1958

Card 2/2

Canonical transformation in classical and quantum mechanics.
Vest.LGU 14 no.16:67-70 '59. (MIRA 12:10)
(Transformations (Mathematics))

24.3000

75324

SOV/57-29-10-1/1

AUTHORS: Kapitan, P. L., Pok, V. A., Vaynshteyn, L. A.

TITLE: Laplace Boundary Problems for a Hollow Cylinder of Finite Length

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1959, Vol 29, Nr 10, pp 1177-1187 (USSR)

ABSTRACT: The paper considers the electrostatic potential of an ordinary layer of charges distributed at a certain surface density over a hollow cylinder of finite length. Such a cylinder may be a piece of a round tubing. The purpose of the study is to develop a general method of solution of integral equations for electrostatic problems giving the relationship between the surface density and its potential in conducting cylinders of finite length. Such problems frequently occur in mathematical physics, there being no general method for their solution. When the length of hollow cylinders is sufficiently big the problem is practically equivalent to a case of solid cylindrical conductors. The paper is of a highly mathematical nature. A hollow cylinder is represented in cylindrical coordinates, and a Laplacian equation for the potential

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V_s of an ordinary layer of surface charge of density S is written. It is stated that this equation may be reduced to an infinite number of linear equations, if the known function $V_s(z)$ may be resolved within $-L < z < L$ (L being one half of the length of the cylinder) range into a series of any system of functions. The equation may also be applied to sufficiently short cylinders (narrow rings) when $L/a \ll 1$, where a represents the radius of the cylinder. Each of the infinite number of linear equations is the summation of $A_{nq} U_q$ products, where U_q are unknown coefficients and A_{nq} represents the system coefficient. For very long cylinders the system coefficients A_{nq} are a function of L/a . Two methods are discussed for the determination of A_{nq} coefficients. The first method applies to relatively short cylinders where $0 < L/a \ll 1$. Here the A_{nq} coefficients are represented as a summation of a convergent series of gamma functions, and at values $L/a \gg 1$ an explicit formula for these coefficients may be had by using the iterative method. The second method discusses cases where $L/a \gg 1$. Using Mellin's transformation [Ref 1], Bessel and Gamma functions [Ref 1], and Meyer functions [Ref 2], A_{nq} is represented as

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matrix form the solution of which results in a fourth-order linear differential equation which can be applied to cases where $L/a > 1$ as well as to those where $L/a \leq 1$. The shape of this fourth-order equation is suitable for the solution on high-speed computing machines of electrostatic problems of the type discussed. There are 6 references, 1 Soviet, 3 U.S., 1 Swedish, 1 non-Soviet.

ASSOCIATION: Institute for Physical Problems, Academy of Sciences, USSR, Moscow
(Institut fizicheskikh problem, AN SSSR)

SUBMITTED: March 4, 1959

Card 3/3

9.1000,24.3000

75325
SOV/57-29-10-2/18

AUTHORS: Kapitsa, P. L., Fok, V. A., Vaynshteyn, L. A.

TITLE: Symmetrical Electrical Oscillations of an Ideally Conducting Hollow Cylinder of Finite Length

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1959, Vol 29, Nr 10, pp 1188-1205 (USSR)

ABSTRACT: The subject matter of the paper is the problem of electromagnetic oscillations of an ideally conducting cylinder. It is a problem with which radio engineering is concerned when antenna vibrators are designed. This study, however, is limited to the case when current density on the surface of the cylinder is uniform and has a longitudinal component only, but it applies to very thin as well as to larger-size solid conductors. Oscillations that take place in such cases are called symmetrical electrical oscillations. The study is of a highly mathematical nature. Basically, it operates with two functions: potential V , which is known, and current density U , which is unknown. The reasoning starts with an integral equation of the potential written within boundary conditions of the

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surface of the cylinder so as to satisfy the Sommerfeld radiation principle. After the application of Bessel, Macdonald, and Hankel functions to the solution of this equation, and using the Neumann multiplier and Legendre polynomial, a relationship in the form of an integral equation is obtained between the V and the U functions. This latter equation is then transformed into an infinite system of linear equations relating V and U. In order to accomplish this an approximate expression is developed for the potential function V resolved in a Fourier series. The approximate expression is good for conditions when $a/L \ll 1$ and $ka^2/2L \ll 1$, where L is one half of the cylinder length, a is its radius, and $k = 2\pi/\lambda$; λ being the wavelength. The current density function U may also be resolved in a Fourier series for any even or odd function. It is stated that when the function V is neither even nor odd it may always be represented as a sum of the even and odd functions, for each of which a corresponding U function, even and odd, must be found. The sum of the latter will give the sought-for current on the surface of the cylinder. The coefficients of the members of these equations, resolved in series, form infinite matrices. These are resolved into the sum of the diagonal matrix and the general

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one; expressions are then given for their computation, and it is shown that a solution may be obtained without the necessity of calculating the determinants but by the application of the iterative method. Prior to using this method, however, the undetermined constants of the equations must first be found, for the calculation of which formulas are developed. The developed theory is compared with the theory of thin antenna vibrators. A distinction is made between short vibrators, with $k \ll g$, and long vibrators, with $k \gg g$ (here, $g = \pi/2L$; the other symbols have already been defined). The fact that electrostatic charges accumulate at the ends of the vibrators causes the error in short vibrators to be greater than in the long ones. In either case current distribution along the axis of the vibrator is similar to that in an open-circuit homogeneous transmission line. Conditions are given for the system of equations to have full regularity, in which case they represent cylinders that are very thin, with $a \rightarrow 0$, and to the solution of which the iterative method may be applied [Ref 3]. The method discussed in the paper may also be applied to the solution of electrostatic problems. The difference between this method and the one proposed in Ref 2 is that in the

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latter the density of the electric charge on the surface of a hollow cylinder was represented by a series each member of which showed absence of a requirement for a charge at the ends of the cylinder, while in the presently proposed method the poor convergence of the series signifies that charges are being concentrated at the cylinder ends. The ends of the cylinder have effect only in case of short cylinders ($L/a \lesssim 1$). When long cylinders are being considered ($L/a \gg 1$), the proposed method may well be used. For large values of kL this method is cumbersome. In such a case, if the antenna vibrator is thin ($ka \ll 1$), the method given in Ref 6 is the more preferable. The method discussed in this paper is suitable for the solution on high-speed computing machines of the type of problems discussed. There are 6 references, 4 Soviet, 1 U.S., 1 Swedish.

ASSOCIATION: Institute for Physical Problems, Academy of Sciences, USSR, Moscow
(Institut fizicheskikh problem, AN SSSR)

SUBMITTED: March 4, 1959

Card 4/4

AUTHOR: Fok, V. A. 11/53-66-4-3 10

TITLE: Remarks on the Article by Bohr on His Discussions With Einstein (Zamechaniya i stat'ya Bora o yego diskussiyakh s Sinshteynom)

REFERENCE: Uspekhi fizicheskikh nauk. 1957. Vol 66, nr 4, pp 599-602 (RUS)

ABSTRACT: Fok, one of the two translators of Bohr's article published in this issue (p 571) makes some remarks on the problems discussed by Bohr with special consideration of those concerning quantum mechanics. These remarks are mainly the results of discussions between the author and Bohr on the occasion of his stay (Fok's) in Copenhagen (February-March 1957). There are 4 references, 3 of which are Soviet.

Card 1/1

AUTHORS: Fok, V. A. Academician, Kuni, F. M. SOV/20-127-6-14/51

TITLE: On the Introduction of a "Quenching" Function in the Dispersion Relations

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 6, pp 1195-1198 (USSR)

ABSTRACT: The object of the present paper is the proof of the analytical continuation of the scattering amplitude into the upper half plane, into the so-called "physical" range of energy. The idea of the proof consists in the introduction of a weight function into the Cauchy formula. In the first part, a limited range in the complex plane is used as a basis, and the proof of the analytical continuation is given by means of two theorems. By means of the results obtained, the dispersion relations are investigated, and the function describing the energy of the dispersing particles is conformally transformed into a semicircle $|z| \leq 1$, and it is ascertained that the problem of the analytical continuation is identical in both planes. The transformed function is then introduced into equations (1a) and (3), and the equations (5) and (6) are obtained. Equation (5) expresses the value of the scattering amplitudes in the upper half plane of energy by its value

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in the "physical" range of energy, and equation (6) is the condition of the analytical continuation. Finally, the dispersion of protons on protons is dealt with as an example. There are 3 figures and 6 references, 2 of which are Soviet.

SUBMITTED: May 29, 1959

Card 2/2

FCK, V. A.

Note on the N. Bohr's article "Discussion with Einstein on epistemological problems in atomic physics." Pokroky mat fyz astr 5 no. 1:11-113. '60

FOK, V.A.

Comparison of different coordinate conditions in Einstein's theory
of gravitation. Zhur. eksp. i teor. fiz. 38 no.1:108-115 Jan
'60. (MIRA 14:9)

1. Leningradskiy gosudarstvennyy universitet.
(Gravitation)

83584

S/056/60/038/005/017/050
B006/B070

24.4400

AUTHOR:

Fok, V. A.

TITLE:

Einsteinian Statics in Conformal Space

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,
Vol. 38, No. 5, pp. 1476-1485

TEXT: In his work on the theory of gravitation, Levi-Civita has not considered the fact that in the static case the space and time coordinated may be completely separated from each other in many different ways. In the present work, the author shows that the most natural method of separating space and time coordinates is that in which the metric of the space is conformally related with the metric usually employed. A space with such a metric is designated by the author as conformal space. Such a space is approximately Euclidean; in any case, it may be considered Euclidean with greater accuracy than in the usual metric. Here, the coordinates which are harmonic in the four-dimensional sense are harmonic also in the three-dimensional sense. The known solutions of Einstein's equations for spherical and axial symmetry are particularly easy to derive if one starts

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Einsteinian Statics in Conformal Space :

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from the gravitational equations in the conformal space. Some further advantages of this metric are emphasized. The Levi-Civita transformation and the transition to the conformal space are then treated in different sections of the paper. While Levi-Civita sets the form $ds^2 = c^2 v^2 dt^2 - a_{ik} dx_i dx_k$, Fok gives the relation $ds^2 = c^2 v^2 dt^2 - (1/v^2) h_{ik} dx_i dx_k$ or $ds^2 = c^2 v^2 dt^2 - (1/v^2) d\sigma^2$. Then, $\sqrt{-g} = (c/v^2) \sqrt{h}$ (h is the determinant of h_{ik}), $dl^2 = (1/v^2) d\sigma^2$, $a_{ik} = (1/v^2) h_{ik}$, and $a^{ik} = v^2 h^{ik}$. The four-dimensional invariant $(R) = 2V\Delta v - 4V_j v^j - v^2 R$, and the components of the Einsteinian tensor $G_{\mu\nu} = (R_{\mu\nu} - \frac{1}{2} g_{\mu\nu} (R))_g$ are given by $G_{ik} = H_{ik} + 2(v_i v_k)/v^2 - h_{ik} (v_j v^j/v^2)$, $G_{00} = c^2 v^2 \{-v^2 H - 2V v + 3V_j v^j\}$. Here, H_{ik} is a three-dimensional conservative tensor of the conformal space, and H is its invariant : $H_{ik} = R_{ik} - \frac{1}{2} h_{ik} R$; $H = -\frac{1}{2} R$. $R_{ik} = H_{ik} - h_{ik} H$. In the following section, the Einsteinian equations are treated in conformal space. It is shown that the equations of Einsteinian statics in conformal space are simple in form

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SUBMITTED: December 21, 1959

APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R000413410013-4"

Card 3/3

FOK, Vladimir Aleksandrovich; NOVOZHILOV, Yu.V., red.; LUK'YANOV, A.A.,
tekh. red.

[Theory of space, time, and gravitation] Teoriia prostranstva,
vremeni i tiagoteniia. Izd.2., dop. Moskva, Gos.izd-vo fiziko-
matem.lit-ry, 1961. 563 p. (MIRA 15:1)
(Relativity (Physics))

S/035/62/000/009/032/060
A001/A101

AUTHOR: Fok, V. A.

TITLE: On the role of principles of relativity and equivalence in Einstein's theory of gravitation

PERIODICAL: Referativnyy zhurnal, *Astronomiya i Geodeziya*, no. 9, 1962, 75, abstract 9A525 (*"Vopr. filosofii"*, 1961, no. 12, 45 - 52, 184, English summary)

TEXT: The author analyzes principles laid by Einstein in the base of the theory of gravitation. He arrives at the conclusion that the so-called "principle of equivalence" and "general relativity principle" do not actually constitute the basis of Einstein's theory; they served as "construction scaffolding" in the period of creating the theory. These principles were needed by the creator of the theory of gravitation to overcome difficulties connected with necessity of expressing completely new ideas by means of old concepts. In the author's opinion, the following principles were actually laid into the basis of the gravitation theory:
1) Amalgamation of space and time into a single four-dimensional manifold with indefinite metric; 2) the assumption that physical processes affect the metric and

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Card 2/2

FOK, V. A.

"On the transverse diffusion of short waves diffracted by a convex cylinder"

Paper to be presented on RADIO (SCIENTIFIC) UNION, INTERNATIONAL (URSI) - Symposium on Electromagnetic theory and Antennas - Copenhagen, Denmark, 25-30 Jun 62

1. Institute of Physics imeni P. n. Lebedev, Academy of Sciences USSR

FOK, V.A. [Fook, V.A.]

Kinematic and gravitational effects on the reading of a clock in free motion. Bul Ac Pol mat 10 no.8:447-450 '62.

1. Leningradskiy gosudarstvennyy universitet. Presented by L. Infeld.

S/056/62/042/004/035/037
B102/B108

AUTHOR: Fok, V. A.

TITLE: The uncertainty principle of energy and time and an attempt to disprove it

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 4, 1962, 1135 - 1139

TEXT: The author discusses two possible forms and their interpretations of the energy and time uncertainty principle: the Heisenberg principle ($\Delta(E'-E)\Delta t > h$), and another variety which comprises two forms. One is a consequence of the Fok-Krylov theorem (ZhETF, 17, 93, 1947; J. of Phys. USSR, 11, 112, 1947), the other was established by Mandel'shtam and Tamm (Izv. AN SSSR, seriya fizich., 2, 122, 1945; J. of Phys. USSR, 9, 249, 1945). These two forms are represented by $\Gamma T_{1/2} = (h/2)\ln 2$ and

$\Delta H \Delta T \geq h/2$; Γ is the level width entering the dispersion relation, $T_{1/2}$ is the half-life. The latter relation is not equivalent to the Heisenberg relation. The attempt made by Aharonov and Bohm (Phys. Rev. 122, Card 1/2

S/056/62/042/004/035/037
B102/B108

The uncertainty principle ...

1649, 1961) to disprove the Heisenberg principle is criticized. They have tried to interpret the uncertainty principle according to Fok and Krylov and introduced into the Hamiltonian an interaction term involving a discontinuous function of time $g(t)$: $H = (1/2m)p_x^2 + (1/2m)p_y^2 + yp_x g(t)$.

This representation implies that instantaneous energy changes of a predictable amount could be observed at a given instant, which hypothesis would be a violation of the uncertainty principle. Aharonov and Bohm have based their criticism of the Heisenberg principle on a logical error (petitio principii). A correct treatment of the problem leads to the Heisenberg principle.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)

SUBMITTED: December 9, 1961

Card 2/2

AMBARTSUMYAN, V.A., akademik; ASRATYAN, E.A.; BOGOLYUBOV, N.N., akademik; VINOGRADOV, A.P., akademik; GINETSINSKIY, A.G.; KNUINYANTS, I.L., akademik; KOCHETKOV, N.K.; KURSANOV, A.L., akademik; MEL'NIKOV, O.A.; NESMEYANOV, A.N., akademik; NESMEYANOV, An.N., doktor khim. nauk; OBRIMOV, I.V., akademik; POLIVANOV, M.K., kand.fiz.-mat.nauk; REUTOV, O.A.; RYZHKOV, V.L.; SPITSIN, V.I., akademik; TAMM, I.Ye., akademik; FESENKOV, V.G., akademik; FOK, V.A., akademik; SHCHERBAKOV, D.I., akademik; FRANK, I.M.; FRANK, G.M.; KHOKHLOV, A.S., doktor khim. nauk; SHEMYAKIN, M.M., akademik; ENGEL'GARDT, V.A., akademik; SHAPOSHNIKOV, V.N., akademik; BOYARSKIY, V.A.; LIKHTENSHTEYN, Ye.S.; VYAZEMTSEVA, V.N., red.izd-va; KLYAYS, Ye.M., red.izd-va; TARASENKO, V.M., red.izd-va; POLYAKOVA, T.V., tekhn. red.

[As seen by a scientist: From the Earth to galaxies, To the atomic nucleus, From the atom to the molecule, From the molecule to the organism] Glazami uchenogo: Ot Zemli do galaktik, K iadru atoma domolekuly, Ot molekuly do organizma. Moskva, Izd-vo AN SSSR, 1963. 736 p. (MIRA 16:12)

1. Akademiya nauk SSSR. 2. Chlen-korrespondent AN SSSR (for Asratyan, Ginetinskiy, Kochetkov, Mel'nikov, Reutov, Ryzhkov, Frank, I.M., Frank, G.M.)
(Astronomy) (Nuclear physics) (Chemistry) (Biology)

FOK, V.A.

A.A.Fridman's works on Einstein's theory of gravitation. Usp.
fiz. nauk 80 no.3:353-356 J1 '63. (MIRA 16:9)
(Fridman, Aleksandr Aleksandrovich, 1888-1925)
(Gravitation)

POK, V. A.

"The principle of relativity of Galileo, his generalization and its applications in the theory of gravitation of Einstein."

Report to be submitted at an International Meeting on "General Relativity: Problems of Energy and Gravitational Waves", Florence, Italy, 9-12 Sep 64.

FOCK, V. [Fok, V.A.] (Leningrad)

The principle of relativity and equivalence in the Einstein's
theory of gravitation. Fiz. Matem. 14 no. 1: 12-18 Ja '64.

FOK
BOCK, V.A. (Leningrad)

Interpretation of quantum mechanics. Fiz szemle 14 no. 3: 90-100
Mr '64.

FOK, V.A.

Principles of Galilean mechanics and Einstein's theory.
Usp. fiz. nauk 83 no.4:577-582 Ag '64. (MIRA 17:9)

KELER, V.R., otv. red.; MILLIONSHCHIKOV, M.D., akademik, red.;
 BLOKHIN, N.N., red.; BLOKHINTSEV, D.I., red.; GNEDENKO,
 B.V., akademik, red.; ZAYCHIKOV, V.N., red.; KELDYSH, M.V.,
 akademik, red.; KIRILLIN, V.A., akademik, red.; KORT'NOV,
 V.V., red.; MONIN, Andrey Sergeyevich, prof., doktor fiz.-
 matem. nauk, red. (1921); NESMEYANOV, A.N., akademik, red.;
 PARIN, V.V., red.; REBINDER, P.A., akademik, red.; SEMENOV,
 N.N., akademik, red.; FOK, V.A., akademik, red.; FRANTSOV,
 G.P., akademik, red.; ENGEL'GARDT, V.A., akademik, red.;
 KREMNEVA, G., red.; BALASHOVA, A., red.; BERG, A.I., akademik, red.

[Science and mankind, 1964; simple and precise information
 about the principal developments in world science] Nauka i
 chelovechestvo, 1964.; dostupno i tochno o glavnom v miro-
 voi nauke. Moskva, Izd-vo "Znanie," 1964. 424 p.
 (MIRA 18:1)

1. Deystvitel'nyy chlen AMN SSSR (for Blokhin, Parin) 2. Chlen-
 korrespondent AN SSSR (for Blokhintsev). 3. Akademiya nauk
 SSSR Ukr. SSR (for Gnedenko).

FOK, V.A.

Further on the uncertainty relation for energy and time. ^{Usp.}
fiz. nauk 86 no.2:363-365 Je '65. (MIRA 18:6)

FOK, V.A.; TULUB, A.V. .

Use of the Laplace transform in solving problems in radiation
theory. Vest. LGU 20 no.16:7-20 '65. (MIRA 18:9)

FOK, Vladimir Aleksandrovich; TSAR'KOVA, Z.I., red.

[Quantum physics and the constitution of matter]
Kvantovaia fizika i stroenie materii. Leningrad,
Izd-vo Leningr. univ., 1965. 27 p. (MIRA 19:1)

L 25632-66 EWT(d)/EWT(1)/T IJP(c)

ACC NR: AP6016071

SOURCE CODE: UR/0054/65/000/013/0007/0020

AUTHOR: Fok, V. A.; Tulub, A. V.

ORG: none

TITLE: Application of Laplace transformation to problems in theory of radiation

SOURCE: Leningrad. Universitet, Vestnik. Seriya fiziki i khimii, no. 3, 1965, 7-20

TOPIC TAGS: Laplace transform, quantum field theory, integral equation, differential equation

ABSTRACT: The system of atomic amplitude equations in the quantum field theory of radiation is transformed into a single integral-differential equation the solution of which may be obtained by using the Laplace transformation. The method developed is applied to the calculation of the natural line width, resonance fluorescence, and external field problems. Orig. art. has: 4 formulas. [Based on authors' Eng. abst.] [JPRS]

SUB CODE: 20, 12 / SUBM DATE: 05Apr65 / ORIG REF: 003 / OTH REF: 005

Card 1/1 PV

UDC: 535.14

RADOVSKIY, M.I.; FOK, V.A., akademik

Vladimir Ivanovich Smirnov; on his 75th birthday. Usp.mat.
nauk 17 no.6:185-190 M-D '62. (MIRA 16:1)
(Smirnov, Vladimir Ivanovich, 1887-)

S/109/63/008/003/001/027
D413/D308

AUTHORS: Fok, V. A., and Vaynshteyn, L. A.

TITLE: Transversal diffusion in the diffraction of short waves on a convex cylinder with smoothly varying curvature. Part I

PERIODICAL: Radiotekhnika i elektronika, v. 8, no. 3, 1963, 363-376

TEXT: L. A. Vaynshteyn and G. D. Malyuzhinets (Radiotekhnika i elektronika, v. 6, no. 8, 1961, 1247; v. 6, no. 9, 1961, 1489) have derived a general asymptotic solution of the two-dimensional diffraction problem for a circular cylinder of large radius; the authors consider how to extend this solution to any arbitrary convex cylinder whose radius of curvature is large compared with the wavelength and varies smoothly. They reject a solution postulated by analogy with the formula for the circular cylinder because it cannot be justified mathematically; by neglecting the

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longitudinal diffusion term, which can be shown to be small under the given conditions, they reduce the wave equation to an equation of parabolic type expressed in radial coordinates and consider substitutions which simplify its integration. In the particular case where the contour of the cylinder along the path of the diffraction wave is a segment of a spiral whose radius of curvature is proportional to the cube of the arc length measured from the focus, an exact separation of the variables in the parabolic equation is possible; by applying a generalized locality principle for expressing the incident wave, it is possible to obtain a unique asymptotic expression for the two-dimensional Green function which is valid in both umbra and penumbra at any distance from the surface of the cylinder. This result is in agreement with results obtained by W. Franz and K. Klante (IRE Trans., 1959, AP-7, Spec. Suppl., 68-70), and also J. B. Keller and B. R. Levy (IRE Trans., 1959, AP-7, Spec. Suppl., 52-61). Some consequences for plane-wave diffraction are examined, and possibilities for generalizing the results are discussed. The

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authors thank G. D. Malyuzhinets for his advice. There are 5 figures.

ASSOCIATION: Institut fizicheskikh problem AN SSSR (Institute of Physical Problems, AS USSR)

SUBMITTED: September 11, 1962

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D413/D308

AUTHORS: Fok, V. A., and Vaynshteyn, L. A.
TITLE: Transversal diffusion in the diffraction of
short waves on a convex cylinder with smoothly
varying curvature. Part II
PERIODICAL: Radiotekhnika i elektronika, v. 8, no. 3, 1963,
377-388

TEXT: Starting from the parabolic equation obtained in Part
I (Radiotekhnika i elektronika, v. 8, no. 3, 1963, 363), the
authors derive an asymptotic solution to the two-dimensional
problem of the diffraction of a cylindrical wave on an arbitrary
convex cylinder for any positions of the source and point of
observation in relation to the cylinder. The assumptions are
that the radii of curvature are large compared with the wave-
length, that the curvature varies relatively slowly, and that the
cylinder either is ideally reflecting or has an impedance para-
meter related in a certain manner to the curvature. Two expres-
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sions are obtained whose zones of validity overlap and which, between them, cover the whole of the umbra and penumbra regions; they are quite different from the solution that could be postulated by analogy with the case of the circular cylinder (see Part I) and are shown to be much more accurate. There are 2 figures.

ASSOCIATION: Institut fizicheskikh problem AN SSSR (Institute of Physical Problems, AS USSR)

SUBMITTED: September 11, 1962

Card 2/2

AMBARTSUMYAN, V.A., akademik; GINZBURG, V.L.; ZEL'DOVICH, Ya.B.,
akademik; PONTEKORVO, B.M.; SMORODINSKIY, Ya.A., ^{prof.}
fiz.-matem. nauk, prof.; FOK, V.A., akademik, CHERNOV,
A.G.; FAYNBOYM, I.B., red.

[Birth and evolution of the galaxies and stars; the third
discussion] Rozhdenie i evoliutsiya galaktik i zvezd; be-
seda tret'ia. [By] V.A.Ambartsumian i dr. Moskva, Izd-vo
"Znanie," 1964. 27 p. (Novoe v zhizni, nauke, tekhnike.
Seria IX: Fizika, matematika, astronomia, no.12)
(MIRA 17:6)

1. Chlen-korrespondent AN SSSR (for Ginzburg, Pontekorvo).

BURKSER, Ye.S. [Burkser, I.E.S.]; BRADIS, L.M. [Bradis, I.E.M.]; KUL'SKAYA,
O.A. [Kul's'ka, O.A.]; FOKA, G.M. [Foka, H.M.]

Trace elements in the peats of the Ukraine. Dop. AN UkrSR no. 7:1222-
1226 '62. (MIRA 13:4)

1. Institut geologicheskikh nauk AN UkrSR, 2. Chlen-korrespondent
AN UkrSR (for Burkser).

FOKA, M. N.

USSR/Chemistry - Physical chemistry

Card 1/1 Pub. 22 - 33/63

Authors : Foka, M. N., and Burkser, L. E.

Title : Mobility of S in thio-acids. Exchange reactions between elementary S and potassium ethylxanthogenate

Periodical : Dok. AN SSSR 99/6, 1011-1014, Dec 21, 1954

Abstract : A study of the interchange reaction between thioacetic acid and elementary S revealed a comparatively low mobility of S in this compound. Reverse addition of the elementary S to the double bond of C = S acid, was found to be the mechanism of this interchange reaction. It was established that the S molecules are sufficiently mobile and contain easily polarizable electrons which bind the S atoms in these electrons. An increase in the polarity of the C = S bond in the potassium ethylxanthogenate leads to an acceleration of the interchange reaction with the elementary sulfur. The rate of reaction is determined by the rate of decomposition of the intermediate polysulfide product. Nine references: 4-USA and 5-USSR (1939-1953). Tables.

Institution: The Medical Stomatological Institute, Kiev
Presented by: Academician A. N. Frankin, June 24, 1954

1. FOKA, P. D.
2. USSR (600)
4. Moldavia - Alfalfa
7. Alfalfa seed culture on Moldavian state farms. Dost. sel'khoz. no. 6, 1952.

9. Monthly List of Russian Accessions, Library of Congress, January, 1953. Unclassified.

10/11/77 J.D.

USSR/Soil Science - Cultivation, Amelioration, Erosion.

J-4

Abs Jour : Ref Zhur - Biol., No 2, 1958, 5809

Author : Foka, P.

Inst : -

Title : Harrowing Autumn Fallow

Orig Pub : Zemledeliya i zhivotnovodstvo Moldavii, 1956, No 10, 16-17

Abstract : The advisability, under Moldavian conditions, of harrowing early autumn fallow for grain crops is shown. The autumn plowing practiced here, which leaves the soil in ridges [grebnistaya] worsens the physical properties of the soil.

Card 1/1

FOKANOV, I.G.

Economic efficiency of open arc welding at a shipyard. Avtom.
svar. 18 no.4:70-72 Ap '65. (MIRA 18:6)

1. Institut elektrosvarki imeni Ye.O. Patona AN UkrSSR.

REKHOVSKIY, Yu.D.; FOKANOV, P.I.

New technology for bridge painting. Put' i put.khoz.4
no. 5:22 My '60. (MIRA 13:11)

1. Rukovoditel' gruppy Nauchno-issledovatel'skogo instituta
mostov (for Rekhovskiy). 2. Zamestitel' nachal'nika distantsii,
stantsiya Volkhovstroy, Oktyabr'skoy dorogi (for Fokanov).
(Railroad bridges--Painting)

1. FOKANOV, V. A.
2. USSR (600)
4. Mammals * West Kazakhstan Province
7. Survey of the mammal fauna of the Ural foothill region of the West Kazakhstan Province. Trudy Zool inst. No. 11 1952
9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

FOKANOV, V.A.

Mammals of the southern part of the Ural Valley. Trudy Zool.
inst. 16:117-136 '54. (MIRA 8:6)
(Ural Valley--Mammals)

FORNOV, V.A.

Materials on the history of the development of the Holocene rodents in
Badkhyz (southern Turkmenia). Biul. MOIP. Otd. biol. 69 no.4:51-56
Jl-Ag '64. (MIRA 17:11)

SARKANY, Tamas; MARGITTAI, Pal; MELEG, Jozsef; FOKAS, Elemer

Linear problems of microwave connections: also, remarks by P.Margittai,
J.Meleg, and E.Fokas. Muszaki kozl MTA 26 no.1/4:35-53 '60.

(EEAI 9:10)

1. Tavkozlesi Kutato Intezet (for Sarkany)
(Radio) (Microwaves)

154

CA FOKASY, L.

Flow capacity of suspended sprays. Lajos Kerckes and László Fokasy. *Agrárudomány* 1, 401-6 (1949).— Expts. showed that the detn. of the wt. of 1 l. spraying agent is not a reliable value when estg. the particle size of powders, nor when detg. the mono- or polydisperse character of a spray, nor when judging the floating capacity. For the detn. of the floating capacity the Hengl-Reckendorfer revolving sedimentating app. was most suitable. When testing Ca arsenate or Pb arsenate preps. it was proved that the As content of the floating suspension did not show significant changes during sedimentation. In practice the detn. of the 5-min. and 30-min. sedimentation values is satisfactory, the graph for agents of poor floating capacity showing a break after 30 min. István Fialy

R-44 FOKASY, L.

FÓKÁNY (L.): Kisérletek a búza kórokozóinak leküzdésére. [Experiments on the control of bunt infection of Wheat.]—Agrikultúrák (Agricultural Science), 1, 6, pp. 254-256, 1949. [Russian and English summaries.]

The only successful method of destroying the spores of *Tilletia tritici* [*T. caries*] and *T. foetens* [*T. foetida*] on wheat grain in Hungary [see preceding abstract] is by pickling (Linhart's basket method). As this does not protect from soil-borne infection the grain must also be coated with non-injurious, dry mercury caustic.

FOKASY, L.

134

Prevention of blight infection of wheat. H. László
Fókásy (State Inst. Quality Control of Agr. Products,
Budapest, Hung.). *Agrárinduló* 2, 51 (1950); cf.
C. I. 43, 8835. -- Germination expts. were made with pure
 $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$, with a CuSO_4 contg. 0.9% Fe sulfate, and
with a mixt. of 90% CuSO_4 and 10% Fe sulfate. Wheat
seeds were treated with 0.5-1.5% solns. of the above mate-
rials. CuSO_4 retarded germination for 2-3 days; after
that no effect on plant growth was observed. The germi-
nated seeds on the 8th day the same height as untreated
plants. This retarding effect was the same when the
treated seeds were washed after treatment as when they
were dried without washing. Fe sulfate as an impurity
in CuSO_4 did not influence the germinating activity of wheat
seeds.
István Finkai

Fokasy, Laszlo

Hungary /Chemical Technology. Chemical Products
and Their Application

I-10

Pesticides

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31315

Author : Fokasy Laszlo

Title : Determination of Volumetric Weight of Pulverulent
Pesticidal Preparations

Orig Pub: Orszagos mezogazd. monosegvizsg. int. evk., 1952-
1953 (1954), 2, 269-273

Abstract: No abstract.

Card 1/1

LAVRINOVICH, M.I.; POKEYEV, G.S.

Redesign of automatic SHA-1 sluice gates. Obog. rud 4 no.6:
38-40 '59. (MIRA 14:8)
(Or: dressing--Equipment and supplies)

FOKEYEV, N. I.

FOKEYEV, N. I.

~~Stability of tower cranes.~~ Sbor.nauch.trud.TISI 1:40-51 '56.
(MIRA 10:12)
(Cranes, derricks, etc.)

FOKEYEV, N.I.

Determining track weight and gauge in designing cranes. Sbor.nauch.
trud.TISI 2:90-96 '57. (MIRA 10:12)
(Cranes, derricks, etc.)

CHUMACHENKO, I.N.; RAKHMATDZHANOV, U.; SUSHENITSA, B.A.; KUZNETSOVA,
N.Ye.; PONOMAREV, V.G.; FOKEYEV, N.I.; ERGASHEV, R.;
PROTIKOVSKAYA, S., red.

[Recent developments in the use of mineral fertilizers)
Novoe v primeneni mineral'nykh udobrenii. Dushanbe, Izd-
vo "Irfon," 1964. 61 p. (MIRA 18:4)

POKEYEV, P.I., kandidat tekhnicheskikh nauk.

Determining operating expenses of irrigation canals. Gidr. i
mel. 6 no.7:23-25 JI '54. (MLRA 7:7)
(Irrigation canals and flumes)

FOKEYEV, P. M.

"How to Obtain a High Yield of Spring Wheat," Saratov. Obl. fzd-vo, 1948

POKREYEV, P. M.

"Hard Wheat in Saratov Province," Saratov. Obl. izd-vo, 1951

1. FCKEYEV, P.M.

2. USSR (600)

4. Grain

7. Cereal crops under irrigation. Dost, sel'khoz. no.10, 52

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

FCHEVW, P.

Wheat - Volga Valley

Cultivation of hard wheat in the Volga Valley.

Kolkh. proizv. 12, no. 3, 1952

9. Monthly List of Russian Accessions, Library of Congress, June 1953² Uncl.

1. FOKEYEV, P.M.
 2. USSR (600)
 4. Irrigation Farming
 7. Grain crops under irrigation. Sel. i sem No. 1 1953.
9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

12 Fokeev, P.M.

USSR/Cultivated Plants - Grains.

L-2

Abs Jour : Ref Zhur - Biologiya, No 16, 25 Aug 1957, 69199

Author : Fokeev, P.M.

Inst :

Title : Increasing Production of Hard Wheat.

Orig Pub : S. kh. Povolzhya, 1956, No 1, 25-32

Abstract : According to data of experimental stations and the Southeast Institute of Agriculture, hard wheats yield a similar crop on layered and on soft grounds. The data given for comparative yields of hard and soft wheats under Southeast arid conditions show that no substantial difference exists in yields of soft or hard wheats under the same conditions.

Card 1/1

FOKEYEV, P. M. Doc Agr Sci -- (diss) "Agronomic Foundations of the Cultivation of Spring Wheat in the Southeast." Mos, 1957. 31 pp 20 cm. (Mos Order of Lenin Agricultural Academy im K. A. Timiryazev), 110 copies (KL, 25-57, 115)

90
- 89 -

POKEYEV, P.M.

Spring cultivation practices for spring wheat in the southeast.
Zemeladnie 6 no.2:24-27 '58. (MIRA 11:3)

1. Nauchno-issledovatel'skiy institut sel'skogo khozyaystva Yugo-
Vostoka.

(Volga Valley--Wheat)

FOKSYEV, P.M., doktor sel'skokhozyaystvennykh nauk, prof.

Snow retention as an important factor in increasing crop yields.
in arid regions. Zemledelie 8 no.12:20-25 D '60. (MIRA 13:11)

1. Nauchno-issledovatel'skiy institut sel'skogo khozyaystva Yugo-
Vostoka.

(Snow) (Field crops)

POLYKOVSKIY, V.S.; ROYZENMAN, F.M.; MAKSAEVA, T.S.; POKEYEV, V.M.

Methodology of determining pressure by inclusions in quartz.
Trudy MGRI 39:92-100 '63. (MIRA 16:10)

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSES AND PROPERTIES INDEX																			
<p><i>*Corrosion of Elektron Alloy at Low Temperatures. V. M. Fokrey (Vestnik Inzhenerov i Tekhnika (Messenger Eng. and Tech.), 1936, (10): 684-690).-- [In Russian.] No corrosion of Elektron (aluminum 7-8, manganese 0-48, zinc 0-73%, magnesium remainder) occurs in tests at the temperature of liquid air in 4 days, but at 0° C. in air considerable corrosion occurred in 6 days; at lower temperatures corrosion was reduced, reaching a minimum at -30° C. between -20° and -40° C. the strength was reduced from 25.7 to 23.5 kg./mm.² and the elongation from 39.6 to about 35%, by atmospheric corrosion in 6 days.--N. A.</i></p>																			
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<p>EDGHI 570151V</p>										<p>EDGHI 570151V</p>									

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<p>100</p> <p>The effect of light on the corrosion of the Electron alloy AZM in sea water having the composition of the Black Sea. V. M. Fokerv. <i>Vestnik Inzhenera i Tekh.</i> 1936, 3923; <i>Chem. Zvezda</i> 1936, II, 3721. Expts. are reported on the corrosion of this alloy (7.15% Al, 0.73% Zn, 0.48% Mn, the rest Mg) in water from the Black Sea (contg. 15.0 g. NaCl, 2 g. MgCl₂, 1.0 g. MgSO₄, 0.5 g. K₂SO₄, 0.1 g. CaCl₂, and 0.7 g. CaSO₄ per l.) in the dark, in diffused daylight and under radiation from an elec. light (Osram-Nitra 1000 v. at 1 m. distance). The corrosion by sea water in the dark, as measured by the evolution of H₂, showed a const. rate for several days, while in daylight or artificial light there was a definite decrease in rate with time. M. G. Moore</p>									
<p>AS - SLA METALLURGICAL LITERATURE CLASSIFICATION</p>									

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													<p>The corrosion of Duralumin and aluminum in sea water, V. M. Etkov and A. A. Sivalova. <i>Vestnik Inzhenerov Tekh.</i> 1937, 51-4; <i>Chem. Zentr.</i> 1937, II, 681-2; cf. C. A. 32, 5762. — Of the artificially prepd. water samples representing several seas, ocean water with the highest salt content showed the greatest corrosive action on Al and still more pronounced action on Duralumin. As a result of the gradual coating of the surface of the metal with the products of corrosion, the corrosive action was lessened with time. This was particularly marked when the products of corrosion adhered tightly. The corrosive action was also dependent upon the quant. compn. of the salt content, alkali halides being more corrosive than sulfates. In general, the protection afforded the metal by the coating formed was sufficient for practical purposes. M. G. M.</p>												
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FOKEYEV, V., M.,

Pa. 150T17

USSR/Engineering - Awards
Literature

Sep 49

"Award of Prizes by the Presidium of the Academy of Sciences USSR to Scientific Workers of Institutions of the Department of Technical Sciences" $\frac{1}{4}$ p

"Iz Ak Nauk SSSR, Otdel Tekh Nauk" No 9

Prizes of 7,500 rubles each were awarded at the 14 Jul 49 meeting to: A. A. Il'yushin, Corr Mem, Acad Sci USSR, Inst of Mech, for work on supersonic flow of gas; Yu. N. Rabotnov, Dr Physicomath Sci, Inst of Mech, for his work, "Slow Flow in Solid Substances"; V. M. Fokeyev, Dr Chem Sci, Inst of Petroleum, for his work, "Viscosity of Stratified Petroleums"; and N. N. Dykalin, Dr Tech Sci, Sec for Sci Development of Problems of Elec Welding and Electrothermics, for his work, "Thermal Principles of Welding, Part I,"

Pa. 150T17

19

Handwritten: A/Bo

Viscosimeter for Determining the Viscosity of Petroleum and Oils Under Pressure (original text in Russian), V. M. Poksev; Bul. Academy Sc. USSR Oct '49 (8 Mthly); pp 1334-1943; 3 illus, 3 tb, 1 eq.

The viscosity of liquids under pressure is investigated by the method of a falling or rolling ball and sliding weight. Generally the object of investigation appears to be lubricating oil; thus the development and perfection of a method for studying the viscosity of liquids under pressure can be considered as the development of a method for measuring the viscosity of lubricating oils. The viscosimeter described herein had certain essential innovations which could not be found in any of the known viscosimeters. The falling sphere is joined by a thread hung over a pulley with the strand of the electromagnet. The falling of the ball is retarded by a weight connected to it by the strand of the electromagnet. The lifting of the sphere is accomplished by pulling the strand and winding it on the in-

Handwritten: Dr. Chem Sci

ASAC-5LA METALLURGICAL LITERATURE CLASSIFICATION

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side of a reel. The method of the falling sphere can be adapted for measuring the viscosity of petroleum and oils under pressure up to 300 atm. The viscosimeter with a vertically falling sphere (constructed by the author) permits the measurement of viscosity at pressures up to 300 atm in temperature intervals ranging from 20° to 60°. The dimensions of the constructed viscosimeter enable the measurement of viscosities in intervals from 0.008 to 50 poise with an accuracy sufficient for practical purposes.